# Data Matters

## A Study on the Theory and Practice of Data Use in the Buck Family Fund's Early School Success Initiative

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# Data Use in Schools – a Focal Point of the Early School Success Grant

## The Early School Success Grant
### *Building a PreK-3 Model in Marin County*

In 2010, the Marin Community Foundation (MCF) launched the Early School Success grant as part of its Achievement Gap Strategic Initiative, with the goal of building a preschool through third grade (PreK-3) system in Marin County. In a PreK-3 model, educators across early learning and K-12 systems collaborate and align instruction in order to provide students with a seamless and coordinated learning experience.

In collaboration with the Marin County Office of Education, MCF provides ten elementary schools in four Marin County school districts with much-needed resources to implement strategies and interventions designed to support a PreK-3 model.

## The Need for Data-Driven Decision Making in Schools

With new state testing, Common Core, and assessment data, teachers and schools have more data to work with than ever before. However, reviewing data takes time and translating it into changes in the classroom is an ongoing learning process. The California Department of Education recognizes that recent shifts in the state standards call for a new vision of professional development and continuous improvement for all educators:

> *To fully implement the California Standards, many teachers will need to learn new pedagogical strategies and integrate formative assessments into their teaching to support continuous improvement of their own instructional practices. This is equally true of principals, many of whom will need intensive professional development to provide a new kind of leadership expected and required by the more ambitious goals for teaching and learning.* (Torlakson, 2015)

There is a growing need to equip educators with the capacity and systems to work with data, and to use it to drive decisions about instructional practice.

## Marin County's Focus on Data-Informed Practice

Since the inception of the Early School Success grants, MCF and the Marin County Office of Education have emphasized professional development, providing school teams with trainings in key focus areas and supporting implementation of research-informed practices. The graphic on the following page provides an overview of the training opportunities offered over the course of the grant.

Recognizing the value of data as a tool to support alignment and coordination within a PreK-3 system, MCF has focused its most recent professional development efforts on implementation of the FirstSchool model, helping schools to develop data reflection routines and use data to inform instructional practices. FirstSchool, a PreK-3 model developed at the Frank Porter Graham Child Development Center, emphasizes a culture of collaborative inquiry where teams engage in action research, interpret and apply information from a variety of data sources, and integrate formative assessment into their instruction.

# Timeline of Professional Development Offerings for Marin County PreK-3 School Partners

As part of the Marin Community Foundation's Early School Success Initiative, the Marin County Office of Education has provided early learning and K-12 school staff with professional development opportunities each year, focusing on key topic areas. A key focus for Year 6 has been the use of data to inform instruction and planning.

## About this Study

In each year of implementing the Early School Success grant, MCF has examined closely an aspect of implementation to both uncover best practices and highlight the progress that schools are making to develop an effective PreK-3 system in Marin. MCF has engaged Learning for Action, a professional third-party evaluation firm, to conduct this research each year.

In 2016, MCF and the Marin County Office of Education chose to explore in depth the topic of data use implementation, and how PreK-3 teams are using data to drive decision-making to best support student achievement. Specifically, the goal of this study was to understand:

- What are effective practices in data use?
- What structures and systems must be in place to support effective data use?
- Where do we see examples of these practices in action?
- What can we learn from these schools to inform district-wide learning on practices that can maximize teachers' time working with data?

To answer these questions, LFA engaged in conversations with a set of stakeholders involved in strengthening data use among PreK-3 teams in the Initiative, as well as observation of data meetings in action at each of the participating schools (see the Appendices for a complete summary of research methods). This report represents the culminating findings from this study, including an:

- **Overview of the Data Use Framework:** Drawing from existing frameworks in the literature and what we learned from schools and key stakeholders in Marin, LFA developed a framework that outlines the critical components and structures that support effective data use in schools.
- **Summary of Critical Components of Data Use:** We provide detailed summaries of each component in the framework, including the key features that define successful implementation of that component.
- **Spotlights on Success in the Early School Success Initiative:** For each component, we provide one or two examples of how the promising practices are taking shape at PreK-3 schools in the Initiative. The set of examples in this brief are by no means an exhaustive list of all the ways in which schools are successfully implementing the critical components in their everyday practice, but they provide a clear glimpse of the framework in action.

# The Data Use Framework

Overview of the Framework

Phases of an Effective Data Cycle

Conditions for Effective Data Cycle

# Overview of the Data Use Framework

This study focuses on the building blocks for data use in schools, where educators have the capacity and structures in place to effectively use data to advance learning and practice. The core concepts from existing research, combined with themes emerging from observations and interviews with stakeholders in the Initiative, point to a set of critical components that schools must have in place to do this work. These components make up the data use framework.

The visuals in this section illustrate the framework, including:

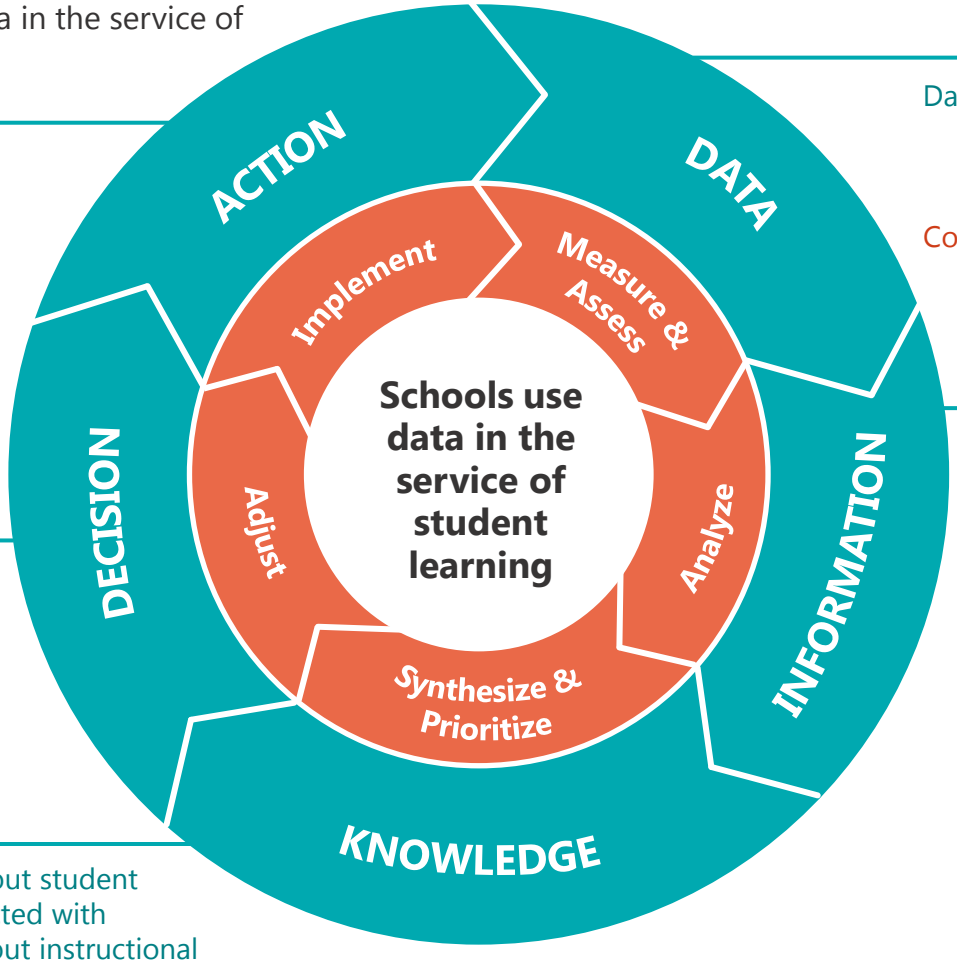
- **The phases of an effective data cycle.** This is the process of transforming raw data into knowledge that leads to informed action. Numbers can only lead to actionable changes that support student learning when schools engage in the five phases of the cycle.

- **The conditions for successful implementation of effective data cycles.** These are the key components of effective data use and the underlying theory of this framework. In order for schools to integrate effective data cycles into their everyday operations and approach to learning, they must have support at the organizational and practical levels.

## The Five Phases of an Effective Data Cycle

Effective data cycles transform raw data into knowledge that leads to informed action, allowing schools to use data in the service of student learning.**

**Conceptual phases of the data cycle**
**Practical phases of the data cycle**




Data believed to measure progress toward intended goals is available and in hand
Collect and organize data

Data results considered within a context becomes meaningful information
Analyze and summarize data

Information about student learning connected with information about instructional practice becomes knowledge
Synthesize information and prioritize what is most important

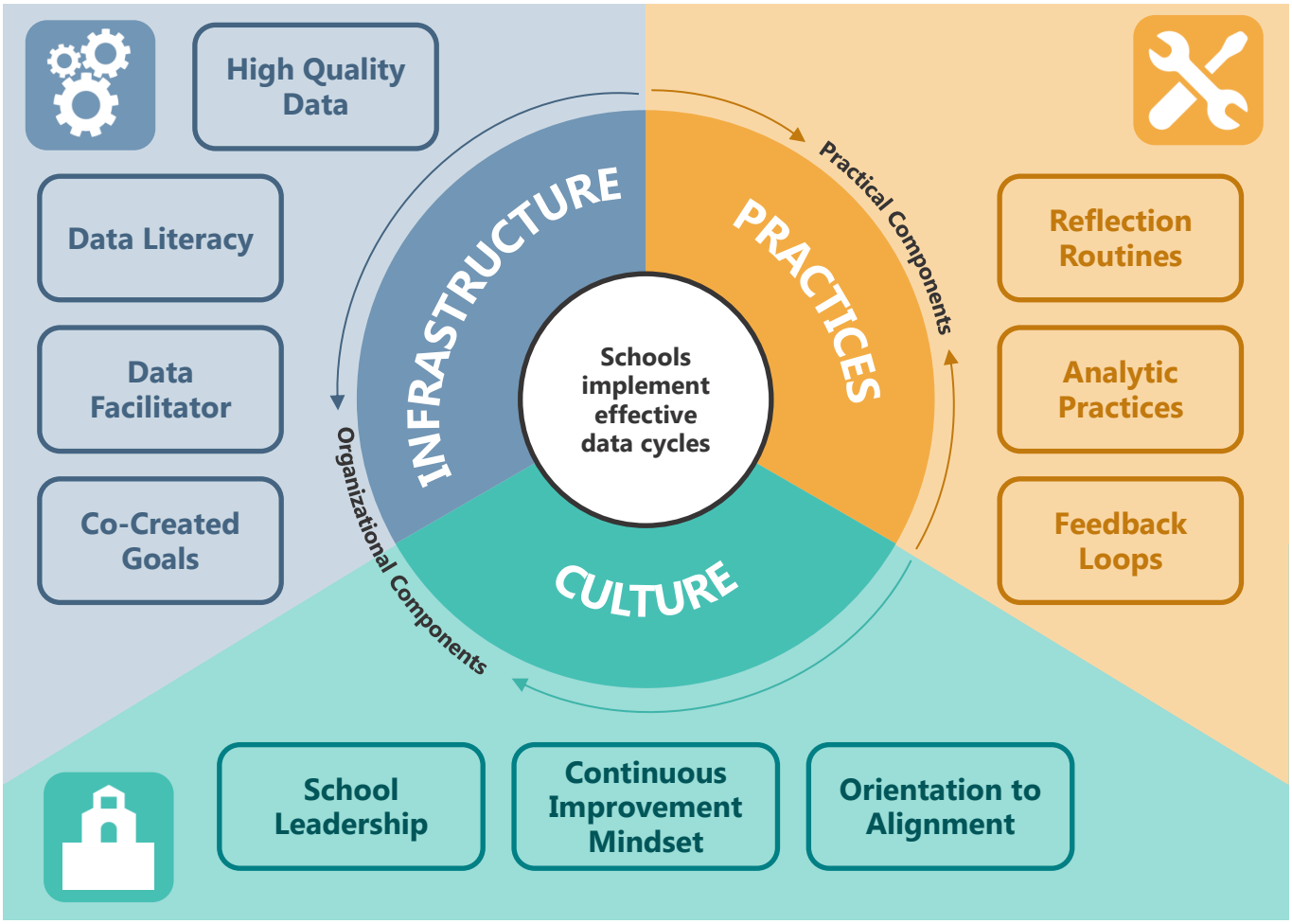
Knowledge is applied to make decisions
Identify where and how to make adjustments to practice

Decisions lead to actionable changes
Implement new instruction and strategies to improve student learning

***Adapted from Mandinach et al.'s "Theoretical Framework for Data-Driven Decision Making" (2006)*

## Conditions Under Which Schools Can Implement Effective Data Cycles

For schools to integrate effective data cycles into their everyday operations and learning approach, there must be support at the organizational (**culture** and **infrastructure**) and practical (**specific practices**) levels. At each level, there are **critical components** that, when in place, allow for schools to use data in the service of student learning.



# Organizational Components

## Supporting Effective Data Use

Culture

Infrastructure

ABOUT

# Organizational Components Supporting Effective Data Use

Research identifies two types of components at the organizational level that support the effective use of data in education:

Components that build a **CULTURE** that supports and promotes the power of data in the decision-making process. These critical components are:

- A supportive school leadership;
- A continuous improvement mindset among staff; and
- A community-wide orientation to alignment.

Components that build an **INFRASTRUCTURE** that supports data use practices, ensuring teams have access and capacity to utilize the data they need to inform instructional changes. These critical components are:

- Availability of high quality data;
- Strong data literacy among staff;
- Staffing of a data facilitator; and
- Co-created goals to guide improvement efforts.

The following slides provide an overview of each of these critical components, as well as examples of success at Initiative schools where we see these components in action.

# CULTURE:
# School Leadership

## Spotlight on Excellence in the Early School Success Initiative

At **Tomales Elementary**, the principal has found creative ways to support more collaborative data work among teachers. Following a parent training where teachers and parents reviewed EduSnap data (and in particular, the need to further increase students' metacognition skills), teachers from the primary grades (PreK through third grade) were inspired to better align their language arts instruction to support growth in metacognition. The teachers asked the principal for more collaborative planning time to look at data and align their instruction. In response, the principal immediately scheduled a day, arranged for substitutes to release the teachers from their classrooms, and provided his own house as a location for their meeting. The group had a full day to review data and coordinate instruction.

At **West Marin School,** the principal has instituted a culture of looking at data. He models this himself by working closely with the Smarter Balanced assessments, inputting the data, and charting the results. He shares these charts with staff, inviting them to interpret and analyze over-time results to identify trends and gaps.

School leadership plays a pivotal role in cultivating school culture and positively influence data use among educators. To promote a culture of data-driven decision-making means that administrators:

- **Set transparent expectations about data.** When principals clearly communicate their expectations for data use, they (1) invite teachers to view data as a non-threatening learning tool (Datnow et al, 2007) and (2) help staff understand how/where to focus their data efforts, so as to align with clearly defined goals for the school (Dougherty, 2015).
- **Make data accessible.** The extent to which educators can use data to drive instruction is dependent on the accessibility of high quality data. Principals can help to ensure that teachers receive assessment data as soon as it is available, and that they have the tools and technology available to sufficiently work with the data (Gates Foundation, 2015). Paper files are not enough, nor are they adequately secure, to give educators access to meaningful, longitudinal data on their students (Data Quality Campaign, 2014).
- **Model good data use.** Principals benefit from data because it allows them to make timely, informed decisions about where to focus resources to support student learning and to confidently invest in the approaches that have been proven to work for their students (Data Quality Campaign, 2016). When principals incorporate data into everyday meetings and model it as part of their own strategy, they are communicating the value of data to staff.
- **Allow time and space for staff to engage with data.** Principals help to create the infrastructure for data use, where educators and families have access to timely and actionable information about their students. Most importantly, principals can (1) implement practices that allow teachers both individual and collaborative time to make use of data as part of the school's strategy to meet student learning goals, and (2) deploy resources such as technology, professional development, or direct coaching to ensure staff have the tools and capacity to effectively interpret and act on data (Wayman et al, 2006; Dougherty, 2015).
- **Empower educators to drive changes in the classroom.** Educators are most likely to use data to inform changes to their instruction when they feel safe and confident in their ability to do so. Principals play an important role in empowering their staff to make real-time adjustments to their instruction when the data show that is what their students need (Datnow et al, 2007).

# CULTURE: Continuous Improvement Mindset

## Spotlight on Excellence in the Early School Success Initiative

At **Tomales Elementary**, staff have engaged in ongoing conversations throughout the school year about the value of teacher innovation and failure. The school principal has led conversations with staff to reframe data as a tool for achieving continuous improvement, rather than a punitive measure. He has found that it is particularly important to communicate a message that it is okay to fail as you try new things to improve your teaching practice.

This continuous improvement mindset is evident in the second grade classroom, where the teacher has felt empowered and trusted by the principal to embark on a journey to transform her classroom into one that fully embodies the research-based FirstSchool model. In doing so, she has restructured her classroom set-up and instructional strategies to better support student learning. She now offers her students flexible seating where each student gets to decide where they sit each day. In fact, this option is now available in all classrooms: the school was able to find the money to provide new flexible furniture for all the primary grade classrooms. In addition to making changes to the seating options in her classroom, the second grade teacher now provides significantly more opportunities for student choice throughout the day. While it has felt chaotic at times and often beyond her comfort zone, she has felt fully supported by her principal to try new methods even when it feels risky, and to continue to use research and data to guide her practice.

If a school wants staff to embrace data as an educational tool, the school needs to make it clear that it values a culture of continuous learning and improvement at all levels. A schoolwide orientation towards learning means using data for the purpose of continuous improvement. Specifically, this means developing a:

- **Growth mindset among staff.** A growth mindset is the belief in one's ability to improve over time, as opposed to the belief that one's ability is fixed. An educator's mindset is critical both for their students' growth and their own. When educators hold a growth mindset, they are more likely to believe a student is capable, and use data to help them track and support their students' progress. Additionally, a growth mindset allows educators to see that they themselves can improve in their abilities, and increases the likelihood that they will use data as a way to adjust and strengthen their teaching practice. Furthermore, when principals hold a growth mindset, they are more likely to see that their teachers are capable, and to support teachers' efforts to adjust their practice when the data show that it will have the greatest impact (Dweck, 2010).
- **Appetite for data.** Educators (teachers and administrators alike) need to *want* to use data to inform their learning and instructional decisions throughout the school year. When there are explicit norms and expectations regarding how staff should be using data, which are then further reinforced by school administrators, educators are more likely to view data as a critical part of their teaching toolkit (Datnow et al, 2007).
- **Safe space for collaborative inquiry.** A continuous improvement mindset grows from a culture of collaboration, where educators actively examine data together, interpret results, discuss possible implications for their practice, and test new teaching approaches (Mandinach et al, 2016). This collaborative inquiry relies on educators having a safe and trusting space where they feel comfortable to share their classroom-level data and to reflect on strengths and weaknesses with their peers (Bryk & Schneider, 2003). The FirstSchool model emphasizes these aspects of collaboration and further advises that educators have a space where they feel that their expertise and insights are valued and that they have a meaningful role in the resulting decision-making (FirstSchool, 2016). The data teams established across the Initiative schools provide a promising model for cultivating a culture of collaborative inquiry.

# CULTURE:
# Orientation to Alignment

## Spotlight on Excellence in the Early School Success Initiative

At **Hamilton K-8 School**, staff participate in weekly grade-level professional learning communities (PLCs), where teachers of the same grade team up to review data, discuss implications, and coordinate teaching strategies. These meetings reflect a commitment to alignment in multiple ways. First, they support horizontal alignment, allowing teachers in the same grade to interpret data together and collectively determine changes to make in their classrooms that will address any gaps or issues they see in the data.

Second, these meetings offer a chance for alignment between teachers and school leadership. The principal and PreK-3 facilitator float to each PLC group during the two-hour window when different grades meet each week. In doing so, both the principal and facilitator work alongside teachers to help interpret the numbers, respond in the moment to questions, and share insights.

Third, the output from these meetings supports vertical alignment. All teachers are given access to a Google doc which serves as a protocol for their meeting. The protocol invites each group to identify the areas they hope to strengthen based on the data (i.e. where numbers are low), and to consider strategies that will engage *all* learners in that area (low and high achievers). Each group documents their ideas and action steps in the Google Doc, which the principal and facilitator review. The facilitator then creates for teachers a readable Google spreadsheet that summarizes all strategies by content area, inspiring adoption of shared practices across grade levels.

The cornerstone of a PreK-3 model is alignment, where schools embrace strategies that support deep collaboration. An orientation to alignment supports a culture of data use because it helps to establish:

- **A common language.** When teams of educators believe in the value of collaboration and coordination, they are more likely to see data sharing as a way to partner with their peers, to set common goals, and discuss instructional practices that will support those shared goals. As Jeff Edmonson, the Managing Director of StriveTogether—a national cradle-to-career collective impact initiative—comments, "You need a common language to bring people together and that language is the data," (Bornstein, 2005). Even if different grade levels use different assessments or curricula, there can be consistency in what educators look for in the data and how they apply it in the classroom. Several Initiative school teams have set schoolwide goals, spanning from preschool to the highest grade level: each grade may be using a different assessment or reviewing different data points, but everyone is monitoring student progress toward the same schoolwide goals.
- **Collective ownership.** An orientation toward alignment promotes a sense of collective ownership that these are *our* students and these are *our* results. When there is a collective understanding that all partners at a school are serving all students in that school, there is less anxiety among staff that data will be used to evaluate their individual performance as a teacher. Rather, there is a shared understanding among all partners about the plan to improve student outcomes, and the need to use data as a tool to improve and coordinate instruction (Means et al, 2009).

*"There is ownership of the data, a sense that it belongs to all of us. This is what [the data is] telling us, so what are we going to do about it because these are our kids. It's an ownership that when you see third grade data, you know it is actually preschool, first, and second grade reflected in that data."*

– Principal

# INFRASTRUCTURE: High Quality Data

## Spotlight on Excellence in the Early School Success Initiative

At **Venetia Valley K-8 School**, third grade teachers are in the practice of using high quality literacy data to provide targeted direct instruction at students' reading level and improve student reading proficiency. With guidance and support from the data facilitator, teachers begin by collecting literacy data from a variety of sources including the Scholastic Reading Inventory, Fountas & Pinnell Benchmark Assessment System running records, and Words Their Way stages. Diagnostic data are collected from all students at quarterly intervals during the school year, or more frequently as needed. When updated assessment data indicates student growth or skills to strengthen, teachers revisit their flexible guided reading groups to make adjustments. Using high quality data from a variety of sources enables teachers to see student growth and make shifts depending on the needs of students at a particular level. Furthermore, because all teachers at a grade level consistently use the same data, they are able to collectively share successes and best practices. Teacher buy-in and frequent use of high quality diagnostic data has contributed to outstanding reading growth for students at Venetia Valley.

Data must be high quality to inform changes to practice that will improve student learning. Researchers and education experts find that high quality data are:

- **Relevant and diagnostic.** Various types of data can be collected through formative or summative assessments of students, standardized tests, surveys of staff/students/parents, behavioral records, or observations. Data must be relevant to the decision maker and decision at hand (Gill et al, 2014). For teachers, relevant and diagnostic data at the student level is imperative (DQC, 2014). Teachers' buy-in and support of data quality is an important factor meaningful data use (RAND, 2006).
- **Accurate, complete, and consistent.** High quality data are accurate (e.g. recorded without errors). Systems to support reviewing data entry may be important to establish. Records should be complete for all students or classrooms and recorded in a consistent format. Formatting consistency supports the review of data at aggregate levels. For stakeholders at the school level, such as a principal, data may need to be in the aggregate form.
- **Current and actionable.** Up-to-date and easily accessible data are the most useful. Educators need real time data in order to identify action steps and adjust instruction immediately (DQC, 2014). Data systems and technological infrastructure can help decision makers collect and report data quickly.
- **Protected and secure.** High quality data are properly stored and secured to maintain student confidentiality). Knowing how to keep data secure and protect student privacy supports ethical and responsible data use (Mandinach et al, 2015).

## INFRASTRUCTURE:
# Data Literacy

Educators who are confident in their knowledge and skills of data analysis and interpretation are more likely to use data for decision-making (Gallagher et al, 2008). To support and promote such confidence, schools must engage in and prioritize activities that strengthen educators' data literacy. A data-literate educator is:

- **Someone who possesses the knowledge and skills to access, interpret, act on, and communicate data to support student success.** A data-literate educator uses data continually, as a part of daily routines, to improve student learning (DQC, 2014). Data literacy requires understanding and combining data with standards, curricular knowledge, pedagogical content knowledge, and observations of how students learn (Mandinach et al, 2015). Data-literate educators recognize data can be used for different purposes (e.g. to diagnose student learning, for accountability, or for continuous improvement) and must be analyzed to address a given problem or question.
- **Supported by the school to build their knowledge and skills.** All educators and school staff members are working to improve and build upon their data literacy skills. This is especially true as data use tools and practices change over time – ongoing training becomes imperative (DQC, 2014). Prioritizing data literacy capacity building requires candidly acknowledging where one currently is in developing their data literacy skillset. Schools may choose to participate in external professional development or training supports that build data literacy. Or, schools may build staff capacity internally by modeling effective data cycles or by providing direct coaching that targets skill development. Strengthening data literacy requires a trusting and supportive culture of data use.
- **A steward of ethical and responsible use of data.** Ethical use of data is an important component of data literacy (Mandinach et al, 2015). Data-literate educators use data with professionalism and integrity (DQC, 2014). For example, data-literate educators know how and when to de-identify data to protect student confidentiality. Trainings or in-service sessions can help build educators' knowledge about how to responsibly disclose and communicate data. Proper data use requires stakeholders to protect student identity and understand how to keep student data secure.

### Spotlight on Excellence in the Early School Success Initiative

At **Venetia Valley K-8 School**, the data facilitator models strong data literacy skills through her work with teachers. During grade-level planning meetings, teams plan instruction, analyze data, and use data to support student learning. The facilitator helps coordinate the agenda and models data literacy skills by connecting student-level data with instructional routines. She works to support teachers by asking questions about data needs and identifying additional assessments to diagnose student learning gaps. By confidently modeling strong data analysis skills and knowledge, the facilitator builds trust and a language for data use. Both the facilitator and principal support teachers to analyze data in collaborative group settings and share best practices. These routines are strengthening data literacy skills and supporting teachers to build their capacity, and buy-in to use data for decision-making.

# INFRASTRUCTURE: Data Facilitator

## Spotlight on Excellence in the Early School Success Initiative

At **Lu Sutton Elementary**, the PreK-3 facilitator works in close partnership with the school principal to lead staff through data reflection and analysis. While the principal is dedicated to providing her staff with guidance and support in the data process, the facilitator position has dramatically built the school's capacity to support staff through this process. In particular, the facilitator has been critical for compiling the data, pulling results together from multiple assessments – this has been crucial in the absence of a unified data system. She also often designs data templates that provide guidance to individual teachers or grade-level teams in their efforts to analyze the data. The principal and facilitator meet regularly to plan for staff meetings, and to coordinate on ways to guide meaningful conversations where staff are learning from data.

At **Loma Verde Elementary**, the principal has established a systematic process to facilitate data reflection and learning. Teachers meet weekly in grade-level groups, and before each meeting she meets with a designated grade-level lead teacher. In in meeting with the lead teachers, the principal has an opportunity to provide guidance on how grade-level teams can spend their group time together, set some expectations for what she hopes will happen in those meetings, and guide teachers to ask questions of the data they will be reviewing together.

A data facilitator is a critical component of an infrastructure that supports a data-driven culture. This person is the primary lead responsible for assisting educators' work with data and is often the principal, an instructional leader, or an experienced teacher (Mandinach, 2012). Schools need to identify a champion to facilitate data efforts and ensure staff have:

- **Access to high quality data.** Facilitators help to collect and distribute high quality data to all key decision-makers. Facilitators may also help to organize data by preparing reports or other materials in their efforts to manage the data process. Easy to manage, low-burden data systems support data facilitators to ensure staff have access to high quality data.
- **Processes for guided reflection.** School schedules have purposeful time allocated for educators to examine and interpret data. During regularly scheduled meetings, data facilitators model data analysis and interpretation and help to guide data reflection cycles (Hamilton et al, 2009).
- **Coaching support and examples of data interpretation modeled.** Facilitators model how to use data to identify student needs and transform classroom practices. Rather than being the sole person responsible for data analysis and synthesis, it is important that facilitators coach staff members to strengthen their data literacy skills (Hamilton et al, 2009). Facilitators have an important role to play in helping staff gain knowledge and skills to use data effectively and to continually engage in the data cycle process.
- **A person to hold them accountable to acting on the data.** Data facilitators provide guidance on how to use data to implement changes in the classroom and play an important role in holding educators accountable for taking action on the data findings (see the section on Feedback Loops).

# INFRASTRUCTURE:
# Co-Created Goals

## Spotlight on Excellence in the Early School Success Initiative

At **Bayside Martin Luther King Jr. Academy,** the team used recent EduSnap data to collaboratively identify schoolwide goals. The team began by stating what each of the graphs showed and then examined the data for trends and patterns. Once they identified literacy as a key component for improvement, the data team was able to decide jointly on two specific areas of focus (oral language and read alouds) which they will collectively work to address in order to strengthen vocabulary and literacy skills.

At **Lynwood Elementary,** teachers and administrators examined data at the end of the school year and went through a goal-setting process. The group decided that the goal for the following year would be focused on supporting students to determine the main idea of a text and explain how it is supported by details. Using this co-created goal to support student growth, the team began to work on vertical articulation of main idea and detail at the beginning of the school year. With a common language for one specific goal, teachers in all grade levels were able to share strategies they use with teachers above their grade level and below. This alignment has continued throughout the school year, as teachers work toward this common goal together.

Schoolwide goals, co-created among staff, support the data cycle process by helping staff members collectively examine data, identify areas for growth, and agree upon goals. Co-created goals should:

- **Be informed by high quality data and reliable assessments.** Schools and teams of educators should develop goals based on a review of high quality assessment data that points to areas of strength and improvement. Using those results, teams then create a data plan, linking action steps and specific plans for using data to support articulated goals (Mandinach, 2012; Hamilton et al, 2009). Each of the Marin schools engaged in this process, developing a school-specific Data Action Plan by identifying, collecting, and organizing schoolwide assessment results across a variety of academic and social emotional measures.
- **Be jointly created by school leaders and educators.** In collaboration with educators, the data facilitator and school administration should work together to identify specific schoolwide goals or focus areas. The process of jointly creating goals helps staff members agree upon priorities for their school and take ownership of action steps. It is important that teachers are part of the goal creation conversation to allow them the opportunity to see how decisions are made and raise questions as needed. When schoolwide objectives are co-created, educators feel invested in taking action steps to reach those goals, and confident in how they will use data to shape instructional decisions (Hamilton et al, 2009).
- **Inform teachers' personal goals in the classroom.** Once schoolwide goals are identified, teachers should set personal goals in their classroom that align with schoolwide objectives (DQC, 2015). To support alignment, classroom practices should be clearly connected to co-created goals. Co-created schoolwide goals should continually inform conversations and instructional practices throughout the school year.
- **Provide a framework and common language to ensure schoolwide goals are consistent with district goals.** Developing a shared vocabulary and collectively defining key concepts related to student success can help to minimize misunderstandings and conflicting assumptions (Wayman et al, 2007; Wayman et al, 2006). School goals should be linked to district goals when possible.

# Practical Components
## Of Effective Data Use

- Reflection Routines
- Analytic Practices
- Feedback Loops

ABOUT

# Practical Components of Effective Data Use

Research identifies three critical practices that, when in place, allow schools to engage in effective data cycles where data has the power to drive change in the classroom and strengthen student learning:

- **Reflection routines** that schools put in place to reflect on data, in order to regularly make adjustments and appropriately respond to students' needs;
- **Analytic practices** that teams engage in to analyze and interpret results during data reflection sessions; and
- **Feedback loops** to share back data results with those who need to see them, and to ensure decisions based on data are leading directly to instructional changes.

The following slides provide an overview of each of these critical practices, as well as examples of success at Initiative schools where we see these practices in action.

# Reflection Routines

Schools that regularly reflect on their data are able to make informed, responsive decisions to better serve students (Cromey & Hanson, 2000). When educators establish a data reflection routine, they are able to gain insight from and respond appropriately to what they see in the data. Effective reflection routines are:

- **Frequent and timely.** Structured time should be set aside for teams of educators to analyze and interpret student data together, and to identify possible changes to instruction (Hamilton et al, 2009). Reflection meetings must also be timely, providing educators with an opportunity to share data at a time and place when they can use it to inform what they are doing next.
- **Occurring at multiple levels.** Educators should engage in frequent reflection at multiple levels: as a whole staff driving toward schoolwide goals or Single School Plan; in grade-level teams, such as the weekly/monthly PLC meetings happening at most Marin schools; and at the individual level where teachers are regularly reviewing assessment data on their own to guide their instruction.
- **Guided by a protocol.** Protocols, such as a consistent set of questions to ask of the data or a customized agenda focused on a specific timely topic, should guide reflection discussions (Leavell, 2016). Protocols help to ensure reflection routines are structured and focused, and thus an effective use of time. This is particularly critical given the limited time and capacity that schools have to dedicate to such routines.
- **A space and time for dialogue.** The meeting agenda should always leave time for educators to discuss the implications of the data and to engage in some level of dialogue. This could be to determine gaps, set goals, and make agreements about next steps.
- **Action-oriented.** The meeting agenda should also always leave time to identify next steps and clarify the course of action that will be taken in response to the data. It is important that educators not get caught up on the *why* (e.g. Why are we seeing these results? What could explain this? What more do we need to know?) and instead use the time together to focus on the *so what now* (e.g. What will we do differently going forward?) (Hamilton et al, 2009).

## Spotlight on Excellence in the Early School Success Initiative

At **Bahia Vista Elementary,** the Classroom Assessment Scoring System (CLASS) has offered an opportunity for preschool and kindergarten teachers to review and reflect on a common set of data together, and collaboratively identify ways in which they can improve instructional practices to increase CLASS scores. Preschool and elementary school partners came together this year to reflect on over-time changes in CLASS scores. The group used a protocol to guide their reflection and keep them focused on discussing changes over time. Teachers examined areas in which the data indicated they were making progress, and those areas where there was continued room for improvement. Teachers worked together to name strategies that contribute to strengthening two specific CLASS domains and discuss best practices.

*"It is critical for the entire staff to be actively engaged in multilevel data analysis. Utilizing state, local, and classroom based data to analyze the strengths and areas of needs of PreK-3 students. It is important to establish a systematic cycle of data analysis, goal setting, implementation of targeted strategies, and evaluation."*

– Early School Success Initiative Data Use Stakeholder

# Analytic Practices

Analytic practices are the actions teams collectively and collaboratively engage in to examine data. While practices may vary based on the decision at hand, teams can strengthen their process by ensuring practices:

- **Are grounded in research.** Grounding data analysis in research helps to anchor the group's priorities, provide common definitions, and identify effective evidence-based approaches. For example, before discussing EduSnap data, many Marin school teams review research identifying the top predictors of third grade success. Starting with research allows teams to see what critical changes need to happen at the subgroup or individual student level to best align with practices that are known to have an impact.
- **Use well-organized high quality data.** Data should be organized in a visual format that supports analysis (e.g. graphs by subgroup or classroom) and enables stakeholders to identify trends. Data by themselves are only numbers and should be organized in a way that helps decision makers make sense of them (Mandinach, 2012; see the section on High Quality Data).
- **Allow the data to speak first.** Effective analysis practices begin with stakeholders reading graphs out loud and simply stating what the graph tells you. Allowing data to speak requires observing data first, without making meaning or connecting it to a context or environment. Participants should note factual trends that they observe in the data and avoid making inferences or judgement (Venables, 2014). If participants jump too quickly to conclusions, it is more likely for the problem to be misdiagnosed and the identified action steps could be ineffective.
- **Zoom in and zoom out.** It is important to analyze data from multiple perspectives, and consider which levels work best for the stakeholders and decisions at hand (Gill et al, 2014). These levels may include:
  - Zooming in: Going from macro to micro allows teachers to see and understand the big picture before looking at their own data. For example, looking at district data and working down to individual students or subgroups.
  - Zooming out: Going from micro to macro allows teachers to start with the data that is most relevant and accessible to them. For example, starting with their classroom level data and then examining the same data at a schoolwide level. This allows teachers to see themselves in the data first, and then see how it applies in a larger context.

## Spotlight on Excellence in the Early School Success Initiative

At **Lu Sutton Elementary**, the PreK-3 team intentionally starts each data review process by reviewing the research to ensure the full team is grounded in the concepts and literature before digging into the data. Currently, Lu Sutton is exploring ways to strengthen their English learner instructional approaches, in response to data results that show a gap for English Learners. Before delving deeply into the data, the team reviewed the literature on Designated and Integrated instruction, and discussed the difference between these two approaches and how it plays out in their current practice. This intentional frontloading of the research has been crucial to ensuring all teachers understand what the literature says, why it is important to look at certain data points, and how the results can translate to actual instructional changes.

**EduSnap** data, collected across Initiative schools, is an example of one data source that can be analyzed from multiple perspectives. Data is collected at the classroom level, and can be aggregated to show grade level or schoolwide level trends. When analyzing EduSnap data, teams may choose to start by examining schoolwide trends and then zoom in to a micro level to see classroom level data. After analyzing EduSnap data, teachers and teams may make goals related to creating more opportunities or activities to balance out student activities in their classrooms.

# Analytic Practices (continued)

## Spotlight on Excellence in the Early School Success Initiative

At **San Pedro Elementary**, kindergarten teachers used their PLC routine to examine recent assessment data to identify (1) where there are gaps in math and literacy, and (2) the students most in need of targeted support in those areas. The group agreed upon specific goals in both math and literacy that they would work to achieve for their identified students for the next month. For example, the goal for literacy was to have students be able to identify 7-10 lower case letters and 4-7 letter sounds. Having an action-oriented agenda helped teachers to create a clear, measurable goal after identifying gaps in the data. During the meeting, teachers had time to engage in dialogue and discussed instructional strategies they could use to support student growth and accomplish the common goals. The facilitator also tied in other school trainings such as GLAD strategies that could support the goal, further aligning school focus areas.

Effective analytic practices engage educators in a continuous data use cycle process to:

- **Summarize gaps or patterns.** To foster practice sharing, educator teams should interpret data collaboratively and connect this information to their context (Hamilton et al, 2009). When interpreting data, the goal is to identify overall areas of relative strengths and weaknesses that could be indicative of a trend, or pattern related to student achievement (Hamilton et al, 2009). For example, using running record and/or oral language retell results, teachers may identify a subset of students who are reading below grade level. Summarizing data helps educators first identify learning needs by noting gaps in knowledge or areas where individual or groups of students need to improve their performance. Examining data over time (e.g. quarterly progress) can also help to illuminate a pattern.
- **Synthesize and triangulate data findings.** After summarizing data and connecting it to their context, educators synthesize data and develop testable hypotheses about ways to improve identified student learning needs (Hamilton et al, 2009). As the group considers the root cause of the learning deficit, they may determine additional information is needed to triangulate data findings. Triangulation means reviewing multiple sources of data to address a particular question. The intention is to make better, clearer connections among three items: (1) the original data and data summary (2) instructional strategies and (3) student performance (Venables, 2014). Triangulating data may either confirm evidence or illuminate an additional need. This process helps educators arrive at well-justified conclusions before taking action.
- **Prioritize goals and action steps.** The final objective is to identify and prioritize the most important, actionable modification or intervention that can improve student learning. Educators should determine new practices or adjustments to instruction that can be implemented immediately and make a plan to track changes using identified measures (Mandinach, 2012). The acronym SMART is a helpful guide for many teams in identifying Specific, Measurable, Attainable, Relevant, and Time-bound goals (Venables, 2014). School administrators can support teaching staff in identifying small changes or adjustments that feel manageable, as well as a date and time to review progress.

# Feedback Loops

## Spotlight on Excellence in the Early School Success Initiative

At **Venetia Valley,** teachers share data with students to engage them in goal-setting process. Using a Reading Growth Tracker, teachers help students mark their independent reading level progress. Students know what their Scholastic Reading Inventory level score is and name a goal for each quarter throughout the year. With the assistance of a teacher, students reflect on their progress and name action steps they can take to support their personal achievement. This student feedback loop example involves frequent progress monitoring and helps empower students to take ownership of their progress and growth.

At **Loma Verde Elementary**, the first grade teacher team has put in place a constant feedback loop that has contributed to greater student achievement in reading. The teachers regularly assess students' reading skills throughout the school year in order to structure their flexible reading groups. Students rotate among groups, depending on their level. By the end of the year, the lowest-level group has significantly fewer students than at the start of the year while the highest-level group is far larger.

Parents, students, teachers, and partners need to have the right information to make decisions. Feedback loops are the process of sharing back data with those who need to see it, and ensuring decisions based on data are leading directly to improved student outcomes. Effective feedback loops connect data back with:

- **School staff.** Data review is integrated into all major decision-making at various levels (e.g. whole school, grade level). Teachers develop after-action plans, subsequent follow-up conversations include a review of the most recent data. Feedback loops enable schools to engage in a continuous data use process where data are used in an ongoing way to inform practice. It is important that teachers feel involved in data processes and feedback loops so that they can take ownership in adjusting and improving their instruction.
- **Family engagement staff.** Staff working directly with families should also have access to student data so that it can inform family engagement communications and service offerings. At Lynwood, after reviewing kindergarten assessment data and finding that her students were entering kindergarten with low rhyming scores, the preschool teacher worked with the school's Family Literacy Program to host a workshop that helped parents learn strategies for rhyming with their children at home during the school year and summer months.
- **Families.** Families should have regular opportunities to discuss their child's data with teachers. When teachers and other school staff actively share data with families and engage them in conversation about the results, they are helping parents to understand how their child is performing and how they can collectively (school, teachers, and families) use the data support the child's learning. Data sharing typically happens during parent-teacher conferences where teachers review student data with parents and set goals for the following semester. Many schools are finding additional ways to share data more regularly with families through web-based formats or weekly newsletters. At Lu Sutton, some teachers send weekly reading assessments to parents, documenting their child's progress and areas for development.
- **Students.** Teachers empower students by giving them the opportunity to access information about their progress and set goals for their learning. Studies have shown that providing students with prompt and constructive feedback on their performance may help to improve their achievement (Hamilton et al, 2009) and further motivate them to make progress (Dweck, 2010). At Venetia Valley, students use a Reading Growth Tracker to set a goal each quarter. Students review their goals to identify how much progress they've made and reflect on what they need to do to achieve their goal.


*"Using a running record, that is really helping teachers see 'Oh, that is what is keeping a student from getting to the next level.' We can teach our kids to read and then we get stuck with comprehension. This is opening us to what we can do—we are learning how to use it and how it affects our instructional cycle."*

– Principal

# Conclusions+ Recommendations

# Looking Back, Looking Ahead: Sustaining Prek-3 Data Practices

The ten schools and four school districts involved in Marin Community Foundation's Early School Success Initiative have made incredible strides over the last seven years in instituting the elements of a PreK-3 model. In doing so, schools and districts have also strengthened a culture and practice of using data to drive decision-making. The elements of a PreK-3 model—a focus on alignment, professional development and growth, as well as co-created goals through a Data Action plan, and a team regularly collaborating and reflecting on data—these are all components of effective data use.

Stakeholders name that much of this would not be possible without grant support from MCF. As we look to grow and sustain data practices among the PreK-3 teams, LFA recommends that schools, districts, and MCF consider focusing attention in these areas:

- **Maintain data facilitator positions.** The data facilitator roles have been critical for providing staff with access to data, processes to guide reflection, guidance in interpreting results, and accountability to act on data results. The schools note that much of their data use would not be happening if not for their facilitator. They have found that the PreK-3 facilitators are best able to fulfill this role when they are staffed in a full-time position on campus, and able to fully dedicate their time to this work through regularly scheduled meetings with staff and on an ad-hoc basis.

- **Invest in technology to facilitate quick and meaningful data access.** Many schools comment that a lack of quick access to data can be a barrier to data use. Technology can be key to providing educators with timely, actionable data. When assessments are completed on an iPad, for example, educators are able to see the results within minutes. Electronic data systems help to display data results in a dashboard or other user-friendly format, making it easy for educators to engage with the data. Additionally, recording video clips of classroom instruction provides teachers with immediate feedback, and an opportunity to reflect on their practice from a new perspective.

# Looking Back, Looking Ahead: Sustaining Prek-3 Data Practices (continued)

- **Focus on efforts to increase data literacy capacity among staff.** The use of data in schools is not a new concept, but data literacy is not often considered a subject or set of skills that educators must master. And in fact, a culture of data use relies on all school staff feeling motivated and confident in using data for decision-making. Under the initiative, most schools have groups of staff who feel able to engage in data analysis and interpretation, but many are still developing their comfort with data. Continued training and support for teachers in their efforts to use data will be critical.

- **Strengthen feedback loops and efforts to act on results.** One important aspect of data literacy is understanding what to do with data results once they are in hand. Schools express the need for ongoing support in their efforts to apply data to practice. This may mean engaging in deeper levels of analysis that goes beyond using data to make changes to classroom management or structure. Ideally, teachers are using data to reflect on their practice and uncover ways in which they can change *how* they are teaching. For example, how are they questioning and prompting students in ways that encourage metacognition? How are they directing students to develop an understanding of mathematical concepts at a deeper level?

While all schools are on a trajectory to implementing effective data cycles into their structures and practice, no one school feels that data is truly integrated into all decision-making levels or that continuous data reflection is happening in every classroom. This is an ongoing journey.

# Appendices

# In Their Own Words...

"The more data we have, the more strategic we can be about helping our kids: we know where they are and how to help them. We can see holes in their learning and can target it. We started embracing data and looking at data, and I personally think a lot of that had to do with our school leader."

*– PreK-3 Facilitator*

"It has to come from a non-threatening position. And I've worked extremely hard in establishing a culture that is able to look at hard data, and to use that data to drive their instruction. Sometimes we see a very glaring hole and I have to step back and let the teachers be professionals and figure out how to patch that hole. That has led to a very intrinsic approach – I count on my teams to help each teacher where there is a hole. That has worked well." *– Principal*

"Our data plan is really alive and we are using it. It is helping us to look at what our goals are; it is a huge part of what we are doing. Those action steps are helping us guide our work but we are also modifying it too. The more opportunities we have to talk and learn from each other, the better." *– PreK-3 Facilitator*

"Alignment does not mean making everything the same. There are many differences that exist in PreK-3 work. There are a variety of different types of PreK programs, grade levels, standards, curricula, and assessments. Differences shouldn't be perceived as a roadblock to PreK-3 success. Instead, we focus on what we have in common. We work to align our system by having a shared focus, building a common language, and developing a streamlined system that supports the PreK-3 students and their families."

*– Early School Success Initiative Data Use Stakeholder*

"I'm excited about the work we are doing around culture and climate. Academics will be there no matter what, but we really need to make the conditions of learning here so that kids want to be here. We need to make it an enjoyable learning experience."

*– Principal*

"We turned some of our weak areas around in just a year or half a year. That was because we had the baseline data to understand how to adjust. We can see how much they spend in whole group, small group, group work without an adult on a common project, or individual work. We had a big change going from whole group down to small group, which is where the predictors are for much better results. We were spending so much time on literacy at the expense of everything else. Now we're much more balanced, a lot more time put in on math." *– PreK-3 Facilitator*

"There is an underlying belief among a lot of our teachers that data is stepping away from the child rather than getting closer to them. We make a point to put data on every agenda in some way, to model different ways that you can pull out data, analyze it, and present it. We're helping to ask new questions of the data. But we have to keep reminding teachers. There have definitely been shifts. We're getting a lot more responses from people, asking questions to try and clarify what they are seeing in the numbers. They will now delve into data and get motivated, excited to make some plans. It's inspired a handful of teachers to do this on their own, but it's not the whole culture of the school yet." *– PreK-3 Facilitator*

"What I've brought to the table is basically a feeling of safety and trust and that they feel comfortable to try things and fail. We have an agenda where we are working together to build capacity in ourselves and each other, a culture of continuous improvement. Teachers have to feel safe in order to grow." *– Principal*

# Research Methods

To conduct this study, LFA engaged in an iterative process, drawing upon both secondary and primary qualitative data sources. The process involved the following key steps.

- **Literature review:** LFA began by reviewing the literature associated with the topic of data use in education, including research on data-driven decision-making and data literacy. This allowed us to ground our thinking in the most current concepts, research, and policy, as well as develop an initial framework summarizing the key components of effective data use in schools.

- **Stakeholder interviews:** LFA next conducted stakeholder interviews with ten individuals who are involved in strengthening data use practices among the PreK-3 teams in Marin. Stakeholders included school staff who have taken a strong lead in data efforts at their school, as well as experts in the field who have led professional development trainings through the Early School Success Initiative, focusing on data and assessment practices. In these interviews, stakeholders shared insights on the best practices in the field and what, on a conceptual level, schools and districts should have in place. Additionally, stakeholders shared their perspective on where they see these practices taking shape among PreK-3 teams in Marin. LFA used this information to further refine the framework to reflect the key components critical to effective data use, and to being identifying those practices in Marin County that reflect "pockets of excellence" in data use.

- **School Appreciative Inquiry interviews:** To explore in depth how schools are implementing the key components of the framework, as outlined in the literature and through stakeholder interviews, LFA then engaged in an appreciative inquiry process with each school. This process included a (1) site visit to each school where an LFA team member had an opportunity to observe a "data meeting" in action (where staff are engaging with and reflecting on data), followed by (2) an interview with the principal and/or staff member involved in leading and shaping data use practices on campus. The observations and conversations provided an opportunity for LFA to further refine the framework components, and better understand how the components can be successfully implemented in practice.

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